

ENERGY STAR® Senior Care Energy Performance Scale Development

Development Timeline:

March 2011 – Original Model Release

December 2011 – Model Amended

Intranet Location:

G:\CPPD\C&I Branch\C&I Tools Team\ENERGY STAR Scale - Reference\Senior Care

Primary Data Source:

Survey conducted in 2009 by Assisted Living Federation of America, American Association of Homes and Services for the Aging, American Health Care Association, National Center on Assisted Living

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1. **Senior Care Provider Association Survey Agreement Memorandum (November 1st, 2009 – ALFA, AAHSA, AHCA & NCAL)**

This document was addressed to EPA from 4 major senior care provider associations stating their willingness to collaborate with the EPA to create an energy performance scale for their industry. The purpose of this memo was to provide EPA with a better understanding of the senior care industry, its associations, the members represented, and the strategies to issue and promote the survey to collect reference data for model development.

2. **Senior Care Provider Energy Survey (November 2009, ALFA, AAHSA, AHCA & NCAL)**

This survey was given to interested association members and industry representatives to support the development of the Senior Care energy performance scale. The participants were asked to provide their recorded data relating to the energy use of their senior care facilities for a period of one year beginning August 1, 2008.

3. **New Senior Care Model, Direction for SRA (September 22nd, 2010 – Amatullah R'id)**

This is the technical direction provided to SRA to develop the Senior Care model for release in March 2011. The document includes complete information on attributes, the prediction equation, the lookup table, eligibility criteria and required score change reports.

4. **ENERGY STAR Senior Care Rating Overview (October 2010 – Alexandra Sullivan)**

This handout provides a brief overview of the ENERGY STAR scale for Senior Care and the data collection/development process. This is considered a high-level introduction to benchmarking Senior Care facilities. Please note that this document was created before the original model was amended in December 2011 to account for climate differently.

5. **Senior Care Model Summary (October 4th, 2010 – Amatullah R'id)**

This internal memo was prepared for C&I Branch management and healthcare sector lead to summarize important characteristics of the new Senior Care model. It details the various stages of the development process, the regression results in the survey reference data and user input considerations (relevant definitions, attributes, etc). A discussion of model performance is included, describing how well the model fits the reference data. Please note that this document was created before the original model was amended in December 2011 to account for climate differently.

6. Energy Performance Rating for Senior Care (November 2010 – Clark Reed & Amatullah R'id)

This presentation was offered to present the proposed model to ENERGY STAR partners and other stakeholders. The presentation provides an overview of the ENERGY STAR commercial buildings program, the model development process, and a proposed approach for Senior Care. The survey initiative undertaken to get the necessary reference data for model development and the results of the survey are also provided. Please note that this presentation reflects the original model that was released in March 2011, and does not address the subsequent amended model released in December 2011, which included a modification to the filter set and the climate terms.

7. Analysis of Expected Ratings Changes (March 21st, 2011 – Alexandra Sullivan)

This internal memo was prepared for the C&I Branch to analyze the expected score changes resulting from any updates to energy performance scales in the March 2011 release, including the new Senior Care model.

8. Senior Care Final Model Replication (November 3rd, 2011 – Alexandra Sullivan)

This document provides all information necessary to replicate the Senior Care energy performance scale model. This includes descriptive statistics summarizing survey data, the filters applied, the final model and the lookup table. The goodness-of-fit of this model is also discussed by providing statistics such as the R^2 value and various graphs of residuals. EPA and ICF used this document to replicate the model independently.

9. Senior Care Final Data & Lookup Table (November 3rd, 2011 – Alexandra Sullivan)

This excel file was used to create the final lookup table. The spreadsheet contains all the information from 553 Senior Care facilities used to recreate the energy performance scale. All requisite variables for rating each building are available such as worker density, heating degree days, pc density, etc. Also shown are the results of a weighted regression, including the coefficients for each variable. The predicted EUI and energy efficiency ratios for each building are then determined and used to create a table listing the score and percentile corresponding to each building.

10. Senior Care Model Adjustments, Direction for SRA (November 18th, 2011 – Alexandra Sullivan)

This is the official technical instruction provided to SRA to amend the Senior Care model for release in December 2011. The document includes complete information on attributes, the prediction equation, the lookup table, eligibility criteria and required score change reports.

11. Technical Description for Senior Care (December 2011 – EPA & ICF)

This is the publicly available document describing the Technical Methodology for the Senior Care energy performance scale. It explains how the model used to rate Senior Care facilities was developed and how it can be systematically applied to eligible Senior Care facilities. This document walks readers through each aspect of development and provides the reference data, the characteristics/variables analyzed, the filters applied, the statistical regression results (i.e. the coefficients and predictive formula) and an example calculation.